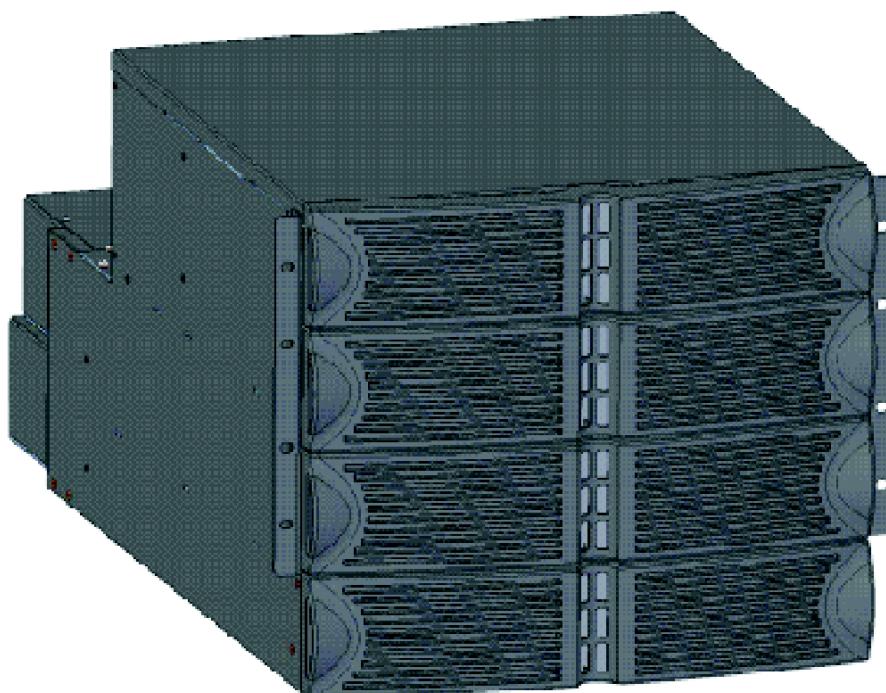


Liebert® APS™ MBC

User Manual – Rack-Mount Maintenance Bypass Cabinet



CONTACTING EMERSON NETWORK POWER FOR SUPPORT

To contact Emerson Network Power Liebert Services for information or repair service in the United States, call 800-543-2378. Liebert Services offers a complete range of start-up services, repair services, preventive maintenance plans and service contracts.

For repair or maintenance service outside the 48 contiguous United States, contact Liebert Services, if available in your area. For areas not covered by Liebert Services, the authorized distributor is responsible for providing qualified, factory-authorized service.

For Liebert Services to assist you promptly, please have the following information available:

Part numbers: _____

Serial numbers: _____

Rating: _____

Date purchased: _____

Date installed: _____

Location: _____

Input voltage/frequency: _____

Output voltage/frequency: _____

DC source reserve time: _____

Product Warranty Registration

To register for warranty protection, visit the **Service and Support** section of our Web site at:

www.liebert.com

Click on **Product Registration** and fill out the form.

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IMPORTANT SAFETY PRECAUTIONS

SAVE THESE INSTRUCTIONS

This manual contains important safety instructions. Read all safety, installation and operating instructions before operating the parallel UPS system. Adhere to all warnings on the unit and in this manual. Follow all operating and user instructions. Individuals must fully understand this equipment to install and operate it.

The Liebert APS MBC (maintenance bypass cabinet) is designed for commercial/industrial use only. It is not intended for use with life support or other designated critical devices. Maximum load must not exceed that shown on the rating label of the maintenance bypass cabinet (MBC). Install and operate the Liebert APS MBC only in a clean indoor environment, free of conductive contaminants, moisture, flammable liquids, gases and corrosive substances. The Liebert APS MBC contains no user-serviceable parts. Refer all faults to your local dealer, local Emerson Network Power® representative or Emerson Network Power Liebert Services.

The Liebert APS modular UPS system with MBC is designed for use on a properly earthed (grounded), 200-240VAC, 50 or 60Hz supply. The system must be installed only by properly trained and qualified personnel. A qualified electrician must review and approve customer-supplied wiring, circuit breakers and intended loads and verify correct input, output and earth connections to ensure compliance with the technical standards and local electrical codes.



WARNING

Risk of electrical shock and high short circuit current. Can cause injury or death.

The following precautions must be observed before replacing the battery pack:

- Wear rubber gloves and boots
- Remove rings, watches and other metal objects.
- Use tools with insulated handles.
- Do not lay tools or other metal objects on the batteries.
- If the battery kit is damaged in any way or shows signs of leakage, contact your local Emerson representative immediately.
- Do not dispose of batteries in a fire. The batteries may explode.
- Handle, transport and recycle batteries in accordance with local regulations.



WARNING

Risk of electrical shock, fire and high short circuit current. Can cause injury or death.

The Liebert APS MBC has been designed and manufactured to ensure personal safety, but improper use can result in electrical shock or fire. To ensure safety, observe the following precautions:

- Turn Off and unplug the Liebert APS MBC before cleaning it.
- Clean the unit with a dry cloth. Do not use liquid or aerosol cleaners.
- Never block or insert any objects into the ventilation holes or other openings of the Liebert APS MBC.
- Do not place the Liebert APS MBC power cord where it might be damaged.

ELECTROMAGNETIC COMPATIBILITY—The Liebert APS MBC complies with the limits of Category C2, pursuant to IEC/EN/AS 62040-2, and for a Class A digital device, pursuant to Part 15 of FCC rules. Operation is subject to the following conditions:

- The output cables must be no longer than 10m (32ft).
- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation. Operating this device in a residential area is likely to cause harmful interference that users must correct at their own expense.

The Liebert APS MBC complies with the requirements of EMC Directive 2004/108/EC and the published technical standards. Continued compliance requires installation in accordance with these instructions and use of accessories approved by Emerson.

NOTICE

This is a Category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

Operate the unit in an indoor environment only in an ambient temperature range of 0-40°C (32-104°F). Install it in a clean environment, free from moisture, flammable liquids, gases and corrosive substances.

This Liebert APS MBC contains no user-serviceable parts except the internal battery pack. The unit's On/Off push buttons do not electrically isolate internal parts. Under no circumstances attempt to gain access internally, due to the risk of electric shock or burn.

Do not continue to use the Liebert APS MBC if the front panel indications are not in accordance with these operating instructions or the performance alters in use. Refer all faults to your Emerson representative or Liebert Services.

Servicing of batteries must be performed or supervised by properly trained and qualified personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from the batteries. Proper disposal of batteries is required. Refer to your local laws and regulations for disposal requirements.

Never block or insert any object into the ventilation holes or other openings.

DO NOT CONNECT equipment that could overload the UPS or demand DC current from the Liebert APS MBC, for example: electric drills, vacuum cleaners, laser printers, hair dryers or any appliance using half-wave rectification.

Storing magnetic media on top of the Liebert APS MBC may result in data loss or corruption.

Turn Off and isolate the Liebert APS MBC before cleaning it. Use only a soft cloth, never liquid or aerosol cleaners.

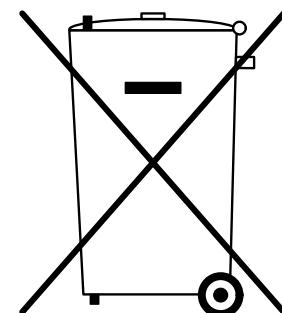
Information for the Protection of the Environment

UPS SERVICING—This unit makes use of components dangerous for the environment (electronic cards, electronic components). The components removed must be taken to specialized collection and disposal centers.

NOTICE TO EUROPEAN UNION CUSTOMERS: DISPOSAL OF OLD APPLIANCES—This product has been supplied from an environmentally aware manufacturer that complies with the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE.

The symbol at right is placed on this product to encourage recycling wherever possible. Recycle this product through a recycling facility at the end of its service life. Do not dispose of this product as unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE).

For information regarding the disposing of this equipment, go to www.liebert.com or contact Emerson's worldwide technical support. Refer to the back page of this manual for contact information.



GLOSSARY OF SYMBOLS



Risk of electrical shock



Indicates caution followed by important instructions



AC input



AC output



Consult the manual



Recycle



Equipment grounding conductor



Bonded to ground



AC voltage



WEEE

1.0 GENERAL DESCRIPTION

Read this manual thoroughly to ensure proper installation and operation of this unit.

Installation must be performed by properly trained and qualified personnel. General operations can be conducted with no need of specialized training.

This chapter describes the Liebert APS MBC, including appearance, components, features, operating mode and specifications.

1.1 System Description

This rack-mountable MBC is intended for use with the Liebert APS, Liebert GXT3 8-10kVA or other UPS with equivalent specifications. Typical applications include supporting workstations, servers, network, telecommunications or other sensitive electronic equipment.

The Liebert APS MBC was designed to provide maximum system availability to business critical equipment by allowing transfer of connected equipment to an alternate power path allowing full isolation of the UPS for maintenance. The UPS can then be turned Off and removed from service with no interruption of power to connected equipment.

1.2 Appearance and Components

Figure 1 General Liebert APS MBC appearance

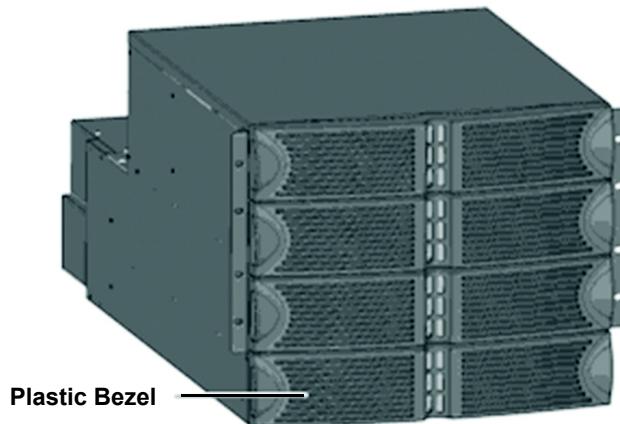
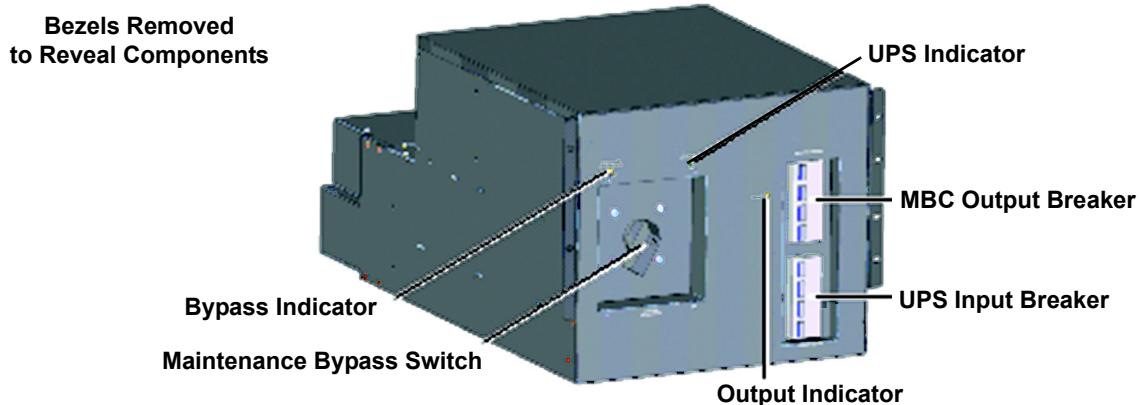


Figure 2 Components on the front of the Liebert APS MBC



The front panel of the Liebert APS MBC has three LED indicators, including Bypass indicator (amber), UPS indicator (green) and OUTPUT indicator (amber).

1.2.1 Bypass Indicator LED

The amber Bypass Indicator illuminates when the maintenance bypass source is available. When the Bypass Indicator is illuminated, it is permissible to transfer the connected equipment to Maintenance Bypass mode by rotating the switch (see **Figure 2**). When the Bypass Indicator is not illuminated, the maintenance bypass source is not ready or available and transfers should not occur.



NOTE

When the switch is in the Maintenance Bypass position, the connected equipment is not protected by the UPS and is susceptible to any AC mains/utility anomalies and outages.

1.2.2 UPS Indicator LED

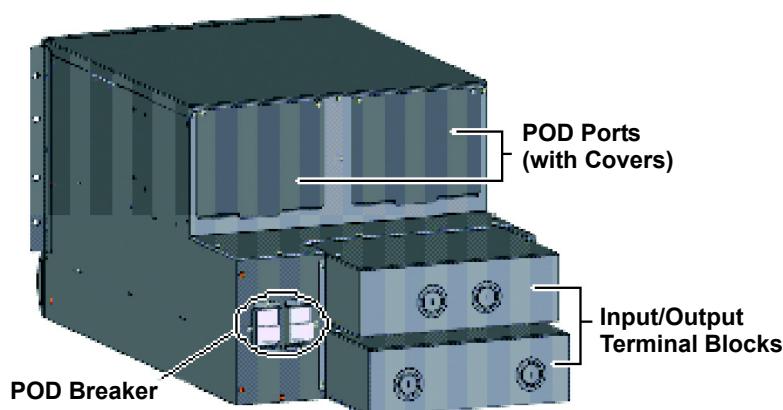
The green UPS Indicator shows when UPS output power is available. When the UPS Indicator is illuminated, UPS output power is available to the Liebert APS MBC and it is permissible to transfer the rotary switch to the UPS Mode (see **Figure 2**). When the UPS indicator is not illuminated, the UPS output power is not ready/available and transfers should not occur.

1.2.3 Output Indicator LED

The amber Output Indicator indicates when the Liebert APS MBC main output breaker is closed and power is available on the main output terminal block. When the Output Indicator is not illuminated, output power is not available.

The POD ports, POD breakers and input/output terminal blocks are on the rear of the Liebert APS MBC, as shown in **Figure 3**.

Figure 3 Parts on the rear of the Liebert APS MBC



1.3 Features

- Supports 8, 10, 15 or 20kVA power, depending on model
- High-speed transfer switch
- Compact design
- Multiple power path indicators
- Easily accessible terminal blocks
- Rack-mountable or tower orientation
- Integral output distribution options via optional PODs

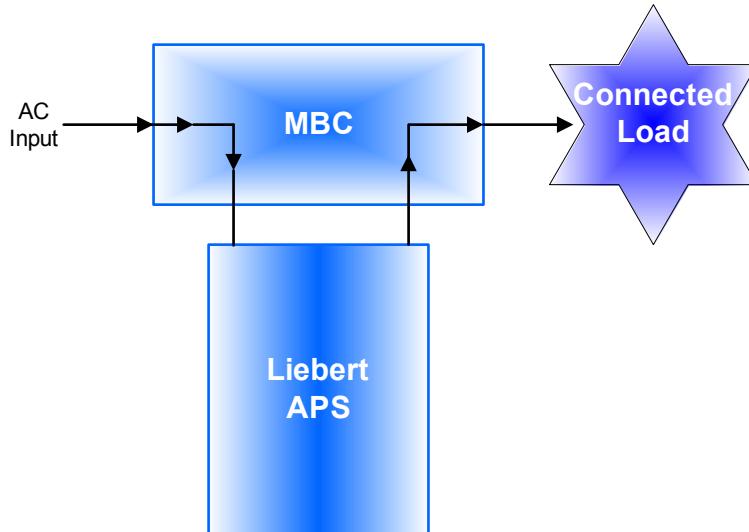
1.4 Operating Mode

The Liebert APS MBC permits maintaining power to all connected equipment during maintenance of the Liebert APS. The Liebert APS MBC operates in two modes, UPS Mode and Maintenance Bypass Mode.

1.4.1 UPS Mode

The diagram below illustrates the Liebert APS MBC operating in UPS Mode.

Figure 4 Operation in UPS Mode

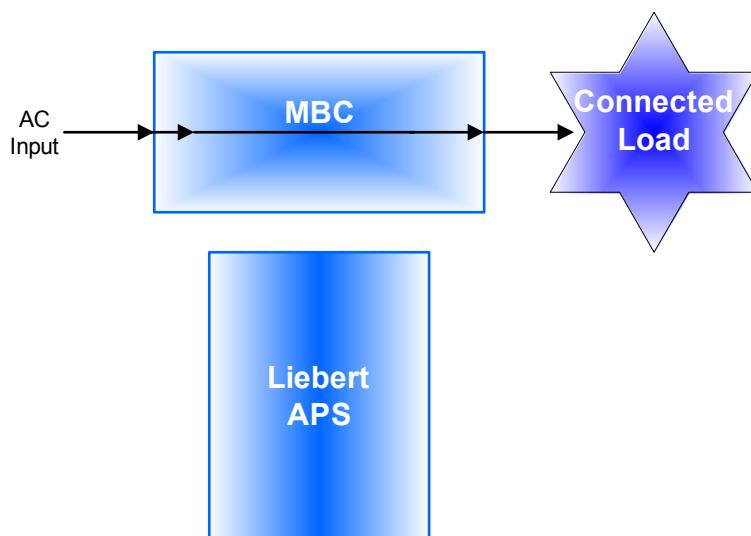


While the Liebert APS MBC is in UPS Mode, the UPS is supplying continuous, high-quality AC power. In this operating mode, connected equipment is protected by the UPS. The maintenance bypass switch is rotated toward the UPS indicator (green) indicates this mode.

1.4.2 Maintenance Bypass mode

The diagram below illustrates the Liebert APS MBC operating in Maintenance Bypass Mode.

Figure 5 Operation in Maintenance Bypass Mode



While the Liebert APS MBC is in the Maintenance Bypass mode it provides an alternate path for power to the connected equipment. Should the UPS need to be taken out of service for limited maintenance or repair, manual activation of the bypass will immediately transfer the equipment from the UPS inverter to the bypass source. In this mode, the connected equipment is not protected from utility/mains power abnormalities or outages. The maintenance bypass switch is rotated toward the Bypass Indicator (amber) in this mode.

2.0 INSTALLATION

This chapter provides the steps and procedures for installing the Liebert APS MBC, including preparation and cable selection and connection.

2.1 Unpacking Inspection

Upon receiving the Liebert APS MBC, unpack the MBC and conduct the following checks:

- Inspect the unit for shipping damage. If any shipping damage is founded, report it to the carrier.
- Check against the delivery list to verify that the types of the accessories are complete and correct. If there is any discrepancy, contact the carrier and your Emerson representative immediately.

2.2 Installation Environment

The Liebert APS MBC environment must be free of conductive contaminants and excessive moisture (water and condensation), flammable vapors, chemical fumes, corrosive gases and liquids.

2.3 Installation Procedures

Installation Tools

The tools required to properly set up your UPS are listed below:

- 13mm (1/2 in) wrench or socket
- #1 and #2 Phillips screwdrivers
- Torque wrench

If the Liebert APS MBC is to be installed in a rack enclosure, see the following for the installation procedures:



NOTE

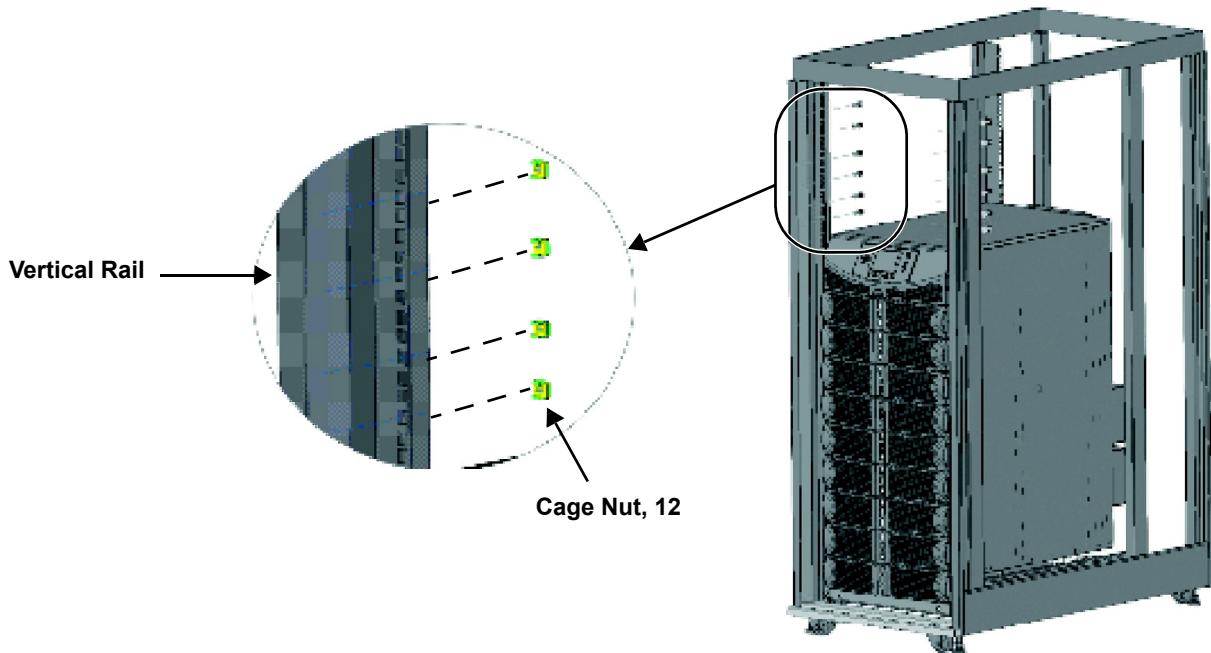
The Liebert APS MBC is rack-mountable. If the Liebert APS is to be rack mounted and there is no UPS in the rack, please first install the UPS before installing the Liebert APS MBC. If there is UPS in the rack and the UPS is operating, please turn off the UPS, disconnect the local input breaker and loads, and remove the UPS Input/ Output cables according to the corresponding UPS user manual.

1. Locate the rack-mount rails from the Liebert APS MBC packaging and review the following procedures to install the rails onto the vertical pole of the rack:
2. Install the cage nuts in the middle square holes of the 1U and 2U height space, the upper square holes of the 3U and 6U height spaces and in the lower square holes of the 5U and 8U height spaces, as shown in **Figure 6**.

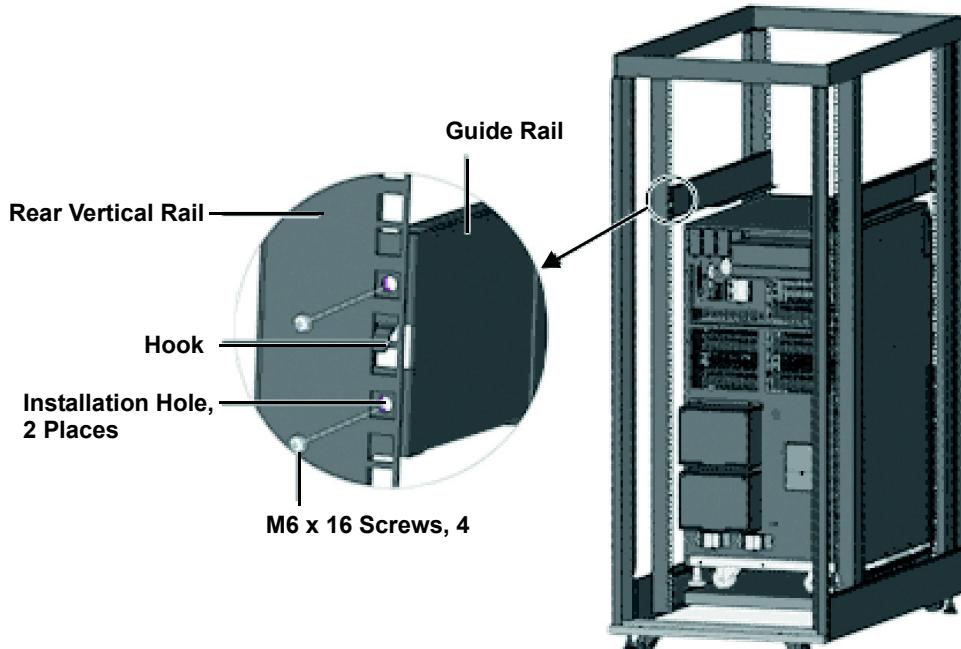


NOTE

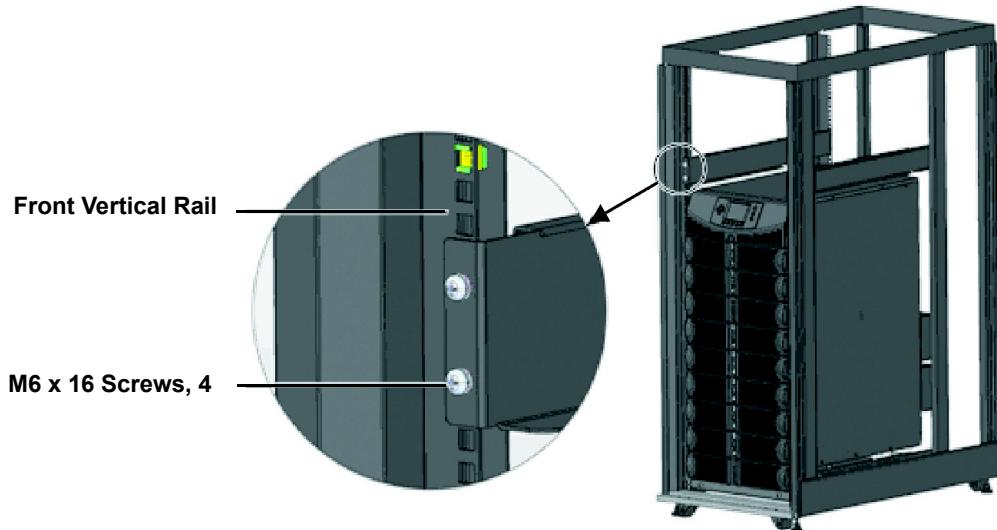
The height space indicates the whole U height space counted from the top of the Liebert APS UPS. The 1U and 2U height spaces are used to install the guide rails. The 3U, 6U, 5U and 8U height spaces are used to install the securing brackets of the Liebert APS MBC.

Figure 6 Installing the cage nuts

- Using the hook on the rear flange of the rack-mount rail, clip it onto the rear vertical pole and use the provided four M6 x 16 screws to secure them, as shown in **Figure 7**.

Figure 7 Attaching the rear of the rack-mount rail kit

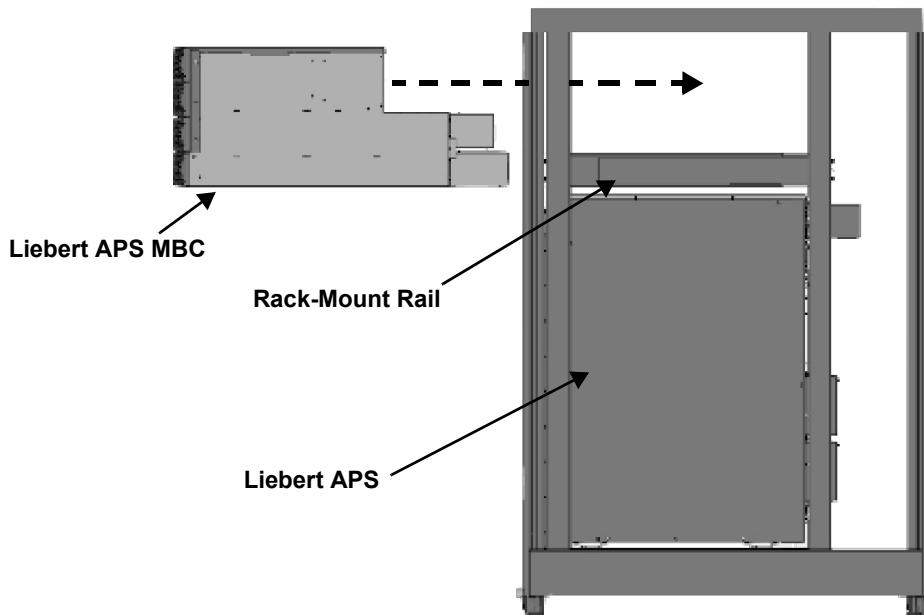
- Using the provided four M6 x 16 screws, secure the front of the rack-mount rails onto the vertical pole, as shown in **Figure 8**.

Figure 8 Securing the front of the rack-mount rails

5. Remove the Liebert APS MBC from the shipping carton and install it using the following steps:
6. Lift the Liebert APS MBC and place it on the guide rails. Slide it into the rack.

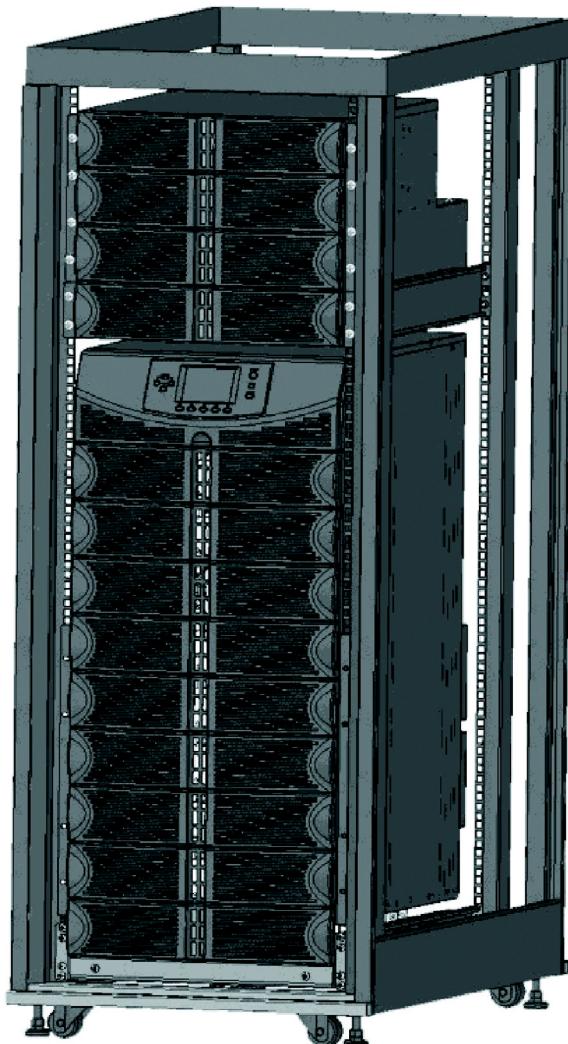
**NOTE**

The weight of the Liebert APS MBC is 30kg (66 lb.), please be careful when lifting it. This may require two people.

Figure 9 Installing the Liebert APS MBC

7. Using the provided eight M6 x 16 screws, securing the Liebert APS MBC to the front vertical post. See **Figure 10** for the completed assembly view.

Figure 10 Completed view of the Liebert APS MBC installation



8. Refer to **2.4 - Cable Selection And Connection** for wiring connections.
9. Refer to **6.0 - POD—Optional** for installing any integral output distribution PODs.

2.4 Cable Selection And Connection

Installation Tools

The tools required to properly set up your UPS are listed below:

- 13mm (1/2 in) wrench or socket
- #1 and #2 Phillips screwdrivers (cross-head)
- Torque wrench

2.4.1 Cable Selection

Select proper cable size/amperage based on the Liebert APS MBC model. The models have different circuit breaker ratings. See **Table 1** for the amperages for proper cable selection.

Table 1 Cables and protection grade

Item	Model			
	ASMBCR2 Series	ASMBCR1 Series	ASMBCRG Series	ASMBCRW Series
Maximum Input Current	125A	100A	63A	50A
Input Protection	125A	100A	63A	50A
Maximum Output Current	125A	100A	63A	50A
Terminal Block Wire Size Range	Maximum: 2/0 (60mm ²) Minimum: 6 AWG (22mm ²)			

90°C rated copper wire is recommended

Terminal block torque requirements are 4.52Nm (40 in-lb)

The Liebert APS unit model number determine which section to follow for the installation instructions for the Liebert APS MBC.

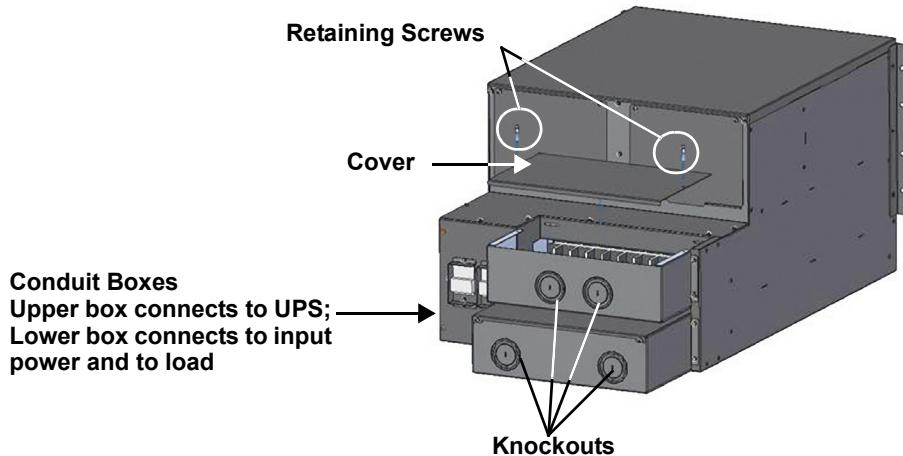
Table 2 Installation reference

UPS Model Number Digits 1-3	UPS System Voltage and Frame Type	See Manual Section
AS1 or ASA	200-240V Input / Output; Transformer-Free	2.4.2
AS2 or ASB	200-240V input / output; transformer-free	2.4.2
AS3 or ASC	200-240 Input - 200/100-240/120 Output; Transformer-Based	2.4.3
AS4 or ASD	200-240 Input - 200/100-240/120 Output; Transformer-Based	2.4.3
AS5 or ASE	200/100-240/120 Input / Output; Transformer-Free	2.4.4
AS6 or ASF	200/100-240/120 Input / Output; Transformer-Free	2.4.4

To connect the cables:

1. Remove the conduit boxes on the rear of the Liebert APS MBC, as shown in **Figure 11**.

Figure 11 Remove the conduit boxes



2. Remove the knockouts on the conduit boxes (see **Figure 11**) and pull the cables through them.
3. Connect the cables to the corresponding input/output terminals, and using a torque wrench, turn the screws clockwise until tightened.



NOTE

The upper terminal block connects with the UPS; The lower terminal block connects with the local power input and loads.

2.4.2 Cable Connection For Liebert APS UPS 200-240V input/output

Refer to **Figures 12** and **13** for the cable connections when the Liebert APS UPS is to be connected and wired for single-phase input, either L-N-PE (50Hz voltages) or L-L-G (60Hz voltages).

Figure 12 Connection of Liebert APS MBC's upper terminal block (to/from UPS unit)

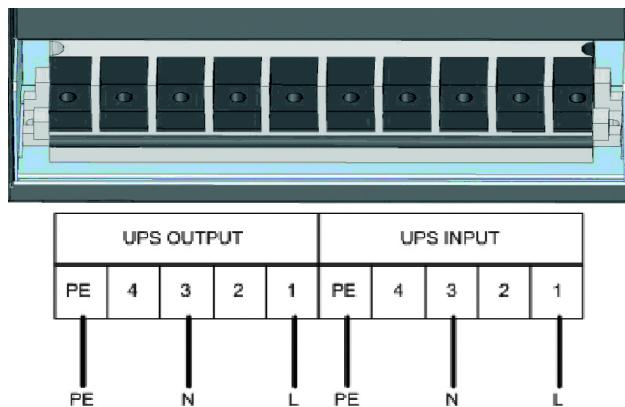
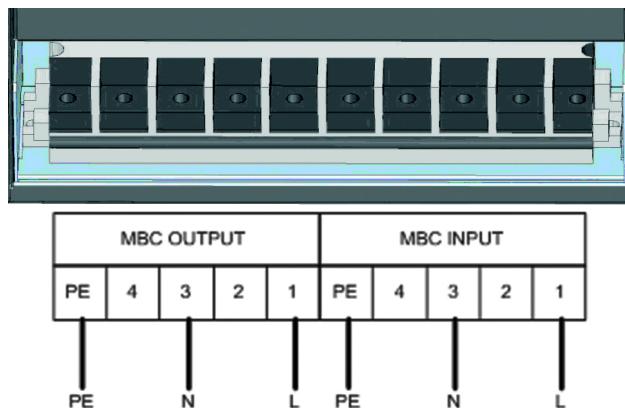


Figure 13 Connection of Liebert APS MBC's lower terminal block (from main AC source/to main distribution panel)



Refer to **Figures 14** and **15** for the cable connections when the Liebert APS UPS is to be connected and wired for three-phase input, L1-L2-L3-N-PE (50Hz voltages only).

Figure 14 Connection of Liebert APS MBC's upper terminal block (to/from UPS unit)

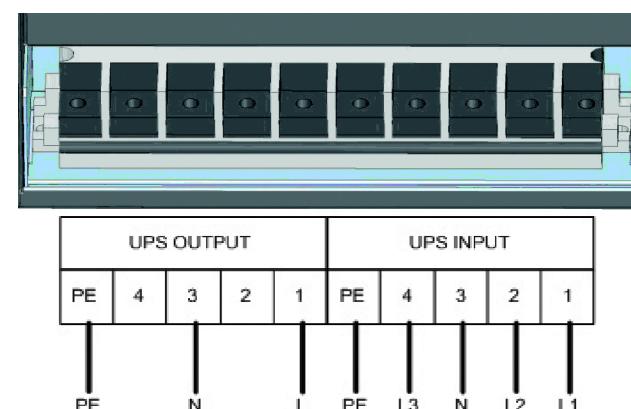
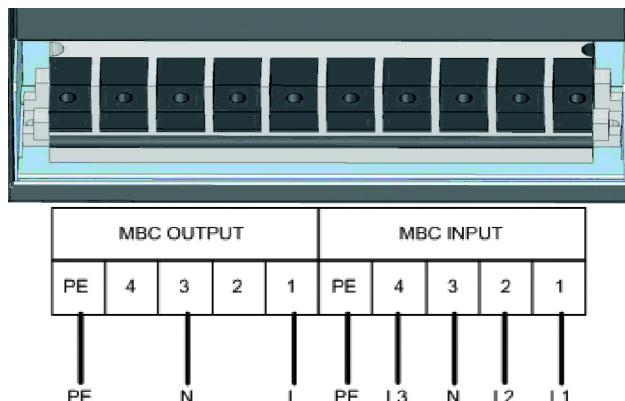


Figure 15 Connection of Liebert APS MBC's lower terminal block (from main AC source/to main distribution panel)



2.4.3 Cable Connection for Liebert APS UPS 200-240V Input / 200/100-240/120V output with integral output transformer

Refer to Figures 16 and 17 for the cable connections when the Liebert APS UPS is to be connected and wired for single-phase input, either L-N-PE (50Hz voltages) or L-L-G (60Hz voltages).

Figure 16 Connection of Liebert APS MBC's upper terminal block (to/from UPS unit)

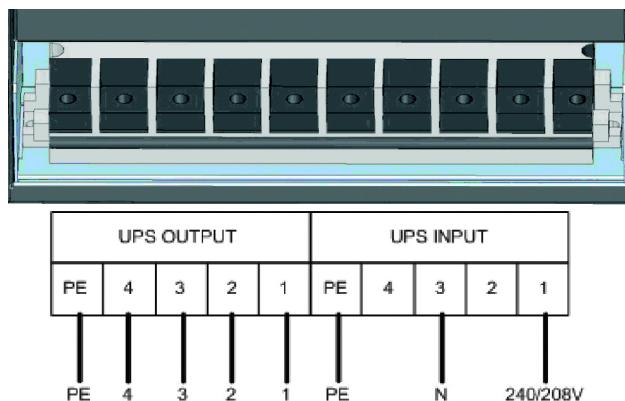


Table 3 Connections, upper terminal block, single-phase input, L-N-PE (50Hz) or L-L-G (60Hz)

Input Voltage	Input terminal wiring			
	1	2	3	4
200/100	L1	Do Not Use	L2/N	Do Not Use
220/110	L1	Do Not Use	L2/N	Do Not Use
230/115	L1	Do Not Use	L2/N	Do Not Use
220/127	L1	Do Not Use	L2/N	Do Not Use
240/120	L1	Do Not Use	L2/N	Do Not Use
208/120	L1	Do Not Use	L2/N	Do Not Use
Output Voltage Needed	Output Voltage (Between Terminals)			
	1-4	3-4	2-3	1-3
200/100	100	100	173 (Do Not Use)	200
220/110	110	110	190 (Do Not Use)	220
230/115	115	115	199 (Do Not Use)	230
220/127	127	127	220	254 (Do Not Use)
240/120	120	120	208	240
208/120	120	120	208	240

Figure 17 Connection of Liebert APS MBC's lower terminal block (from main AC source / to main distribution panel)

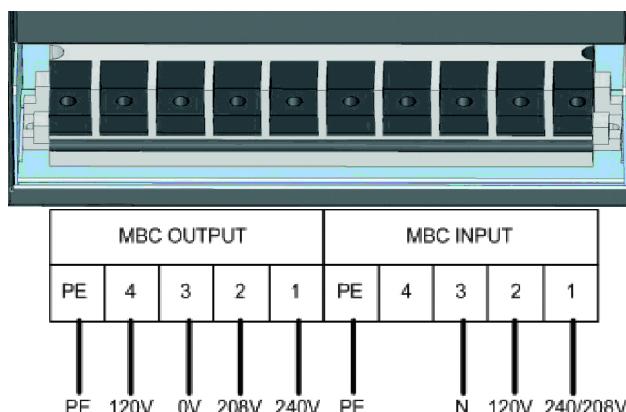


Table 4 Connections, lower terminal block, single-phase input, L-N-PE (50Hz) or L-L-G (60Hz)

Input Voltage	Input Voltage (Between Terminals)			
	1-4	1-2	2-3	1-3
200/100	Do Not Use	100	100	200
220/110	Do Not Use	110	110	220
230/115	Do Not Use	115	115	230
220/127	Do Not Use	127	127	254 (Do Not Use)
240/120	Do Not Use	120	120	240
208/120	Do Not Use	120	120	240
Output Voltage Needed	Output Voltage (Between Terminals)			
	1-4	3-4	2-3	1-3
200/100	100	100	173 (Do Not Use)	200
220/110	110	110	190 (Do Not Use)	220
230/115	115	115	199 (Do Not Use)	230
220/127	127	127	220	254 (Do Not Use)
240/120	120	120	208	240
208/120	120	120	208	240

**NOTE**

- **To connect a 120V load** between Terminal 3 and Terminal 4 of the Liebert APS MBC OUTPUT, make sure that there is 120V voltage between Terminal 2 and Terminal 3 of the Liebert APS MBC input.
- **To connect a 208V load** between Terminal 2 and Terminal 3 of the Liebert APS MBC output, make sure that there is 208V voltage between terminal 1 and terminal 3 of the MBC input.
- **To connect a 240V load** between Terminal 1 and Terminal 3 of the Liebert APS MBC output, make sure that there is 240V voltage between Terminal 1 and Terminal 3 of the MBC input.
- **To connect a 120V load** between Terminal 3 and Terminal 4 of the Liebert APS MBC output, simultaneously, connect a 208V load between Terminal 2 and Terminal 3 of MBC output or a 240V load between Terminal 1 and Terminal 3 of MBC output, make sure that there is 120V voltage between Terminal 2 and Terminal 3 of the MBC input, at the same time, there is 208V voltage between Terminal 1 and Terminal 3 of the MBC input or 240V voltage between Terminal 1 and Terminal 3 of the MBC input.

2.4.4 Cable Connection for Liebert APS UPS 200/100-240/120V Input/Output

Refer to Figures 18 and 19 for the cable connections when the Liebert APS UPS is to be connected and wired for single-phase input, L-L-N-G (50/60Hz voltages).

Figure 18 Connection of the upper terminal block of the Liebert APS MBC (to/from UPS unit)

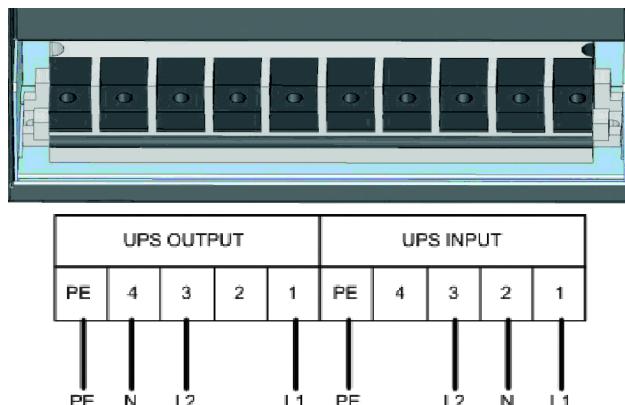
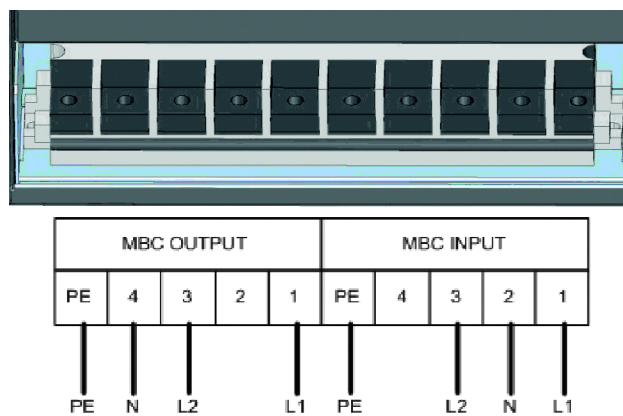


Figure 19 Connection of the lower terminal block of the Liebert APS MBC (from main AC source / to main distribution panel)



3.0 OPERATION

This chapter gives a detailed description on the Liebert APS MBC operation, including startup, shutdown and transfer between UPS and maintenance bypass.



CAUTION

Risk of electric shock hazard. Can cause injury or death.

This Liebert APS MBC must be installed by properly trained and qualified personnel and connected in accordance with national and local electrical codes.

3.1 Startup

Follow these steps to startup the UPS while connected to the Maintenance Bypass.

1. Set the rotary maintenance bypass switch to the UPS position on the front of the Liebert APS MBC.
2. Close the UPS input breaker and the MBC output breaker on the front of the Liebert APS MBC.
3. Close the input breaker located in the local AC power panel providing power to the UPS system.
4. Start the Liebert APS according to its user manual (see SL-25510, which shipped with the UPS).
5. The load is now supplied with conditioned power through the UPS.
6. Close the corresponding POD breaker, if any PODs are installed.

3.2 Shutdown (with Loss of All Power)

To power down the system.

1. Shut down the UPS according to its user manual and open the UPS's input breaker and any breakers on each connected external battery cabinet.
2. Open the remote input breaker in the local power panel and any POD breakers on the rear of the Liebert APS MBC.
3. Open the UPS input breaker and the MBC output breaker on front of the Liebert APS MBC.

3.3 Transfer of the System from UPS to Maintenance Bypass

To transfer from UPS to maintenance bypass:

1. Remove the four plastic bezels from the front of the Liebert APS MBC by pulling equally on each side of one bezel at a time.
2. Verify that the Bypass Indicator (amber) on the front of the Liebert APS MBC is illuminated. If this indicator is not illuminated, do not proceed and refer to **4.0 - Troubleshooting**.
3. If the Bypass Indicator is illuminated, refer to the Liebert APS user manual to transfer the UPS to internal bypass.
4. Using the rotary maintenance bypass switch on the front of the Liebert APS MBC, transfer it from UPS to Bypass.
5. Turn the UPS Off using the LCD display, then open any breakers on any connected external battery cabinets.
6. Open the UPS input breaker on the front of the Liebert APS MBC.
7. Open both the input and output breakers on the Liebert APS.
8. The UPS is now electrically isolated and may be transferred to maintenance bypass.

3.4 Transfer of the System from Maintenance Bypass to UPS

To transfer to UPS from maintenance bypass:

1. Close the UPS input and output breaker on the Liebert APS.
2. Close the UPS input breaker on the front of the Liebert APS MBC.
3. Start the Liebert APS according to its user manual and leave it in internal bypass mode.
4. Verify that the UPS Indicator (green) on the Liebert APS MBC is illuminated. If the UPS Indicator does not illuminate, do not proceed and refer to **4.0 - Troubleshooting**.
5. If the UPS Indicator is illuminated, transfer the rotary maintenance bypass switch from Bypass to UPS.
6. Transfer the Liebert APS from internal bypass to inverter.
7. Conditioned power is now being supplied through the UPS.

4.0 TROUBLESHOOTING

Table 5 Troubleshooting

Problem	Cause	Solution
Bypass Indicator (amber) not illuminated	Bypass not present	Call qualified service personnel to restore power to local power
	Liebert APS MBC input cable is not connected to bypass.	Refer to 2.4.1 - Cable Selection
UPS Indicator (green) not illuminated	UPS output power not present	Turn on UPS, refer to UPS user manual.
	UPS input and/or output cable is not connected to the Liebert APS MBC.	Refer to 2.4.1 - Cable Selection
Output Indicator (amber) not illuminated	The output breaker is not closed.	Close MBC output breaker (see Figure 2 for its position)
	The load cable is not connected to the Liebert APS MBC	Refer to 2.4.1 - Cable Selection
Liebert APS MBC will not start some/all connected loads	The MBC output breaker and/or POD breaker is open.	Close MBC output breaker and/or POD breakers, refer to Figure 2 and 3 for their positions
	Overload on Liebert APS MBC	Recalculate load requirement and choose a proper version.

5.0 SPECIFICATIONS

Table 6 Specifications

Item	Specification
General	
Unit Rating	ASMBCR2 Series: 125A max
	ASMBCR1 Series: 100A max
	ASMBCRG Series: 63A max
	ASMBCRW Series: 50A max
Compliant Safety Standards	UL 1778-4th Edition, CSA C22.2 No. 107.3, IEC62040-1:2008
Mechanical	
Dimensions, W x D x H, mm (In)	440 × 862 × 355 (17.3 x 33.9 x 14.3)
Weight, kg (Lb)	30 (66.1)
Environmental	
Operating Ambient Temperature	0°C to +40°C (32°F to 104°F)
Storage Ambient Temperature	-20°C to +60°C (-4°F to +140°F)
Humidity	0 to 95% non-condensing
Agency/standards	ISTA Procedure 1A
Input Parameters	
Nominal Input Voltage	200/208/220/230/240V ~ L + N + PE 220/380V ~ 240/415V ~ L1 + L2 +L3 + N + PE 100/200V ~ 120/240V ~ L1 + L2 +N + PE
Nominal Input Frequency	50/60Hz
Input Frequency Range	40Hz ~ 70Hz
Output Parameters	
Output Voltage	200/208/220/230/240V ~ L + N + PE 100/100/173/200 - 120/120/208/240V ~ 100/200 110/220 115/230 120/208 120/240 127/220 ~ L1 + L2 +N + PE
Transfer Time, milliseconds	<6
Output Frequency	50/60Hz

6.0 POD—OPTIONAL

6.1 Introduction

Power Output Distribution (PODs) are optional, integral distribution units that may be attached on either a UPS or a Maintenance Bypass Cabinet. PODs provide safe and reliable power distribution function for users to directly connect equipment that is to be protected by the UPS. The POD's technical specifications are listed in **Tables 7 through 9**.

Table 7 Technical specifications of the POD (PD2-101 ~ PD2-105)

Parameter	POD model				
	PD2-101	PD2-102	PD2-103	PD2-104	PD2-105
Dimension, W x D x H, in (mm)					
Unit	7.4 × 5.7 (188 × 145)				
Shipping	11.9 × 20.6 × 8.7 (302 × 522 × 220)				
Weight, lb (kg)					
Unit	4.4 (2)	6.6 (3)	—	6.6 (3)	4.4 (2)
Shipping	6.6 (3)	8.8 (4)	—	8.8 (4)	6.6 (3)
Electrical Specification					
Rating Amp.	63A 2-pole input breaker				
Output Power Connection	L6-30 (2 pcs) 5-20R (8 pcs)	L6-20R (4 pcs) 5-20R (4 pcs)	—	5-20R (4 pcs) L6-30R (2 pcs) L6-20R (2 pcs)	5-20R (4 pcs) L5-30R (2 pcs) L5-20R (2 pcs)

Table 8 Technical specifications of the POD (PD2-106 ~ PD2-109)

Parameter	POD model			
	PD2-106	PD2-107	PD2-108	PD2-109
Dimension, W x D x H, in (mm)				
Unit	7.4 × 5.7 (188 × 145)			
Shipping	11.9 × 20.6 × 8.7 (302 × 522 × 220)			
Weight, lb (kg)				
Unit	6.6 (3)	4.4 (2)	4.4 (2)	4.4 (2)
Shipping	8.8 (4)	6.6 (3)	6.6 (3)	6.6 (3)
Electrical Specification				
Rating Amp.	63A 2-pole input breaker			
Output Power Connection	L6-20R (4 pcs) 5-20R (4 pcs)	L5-20R (4 pcs) 5-20R (4 pcs)	L6-30R (2 pcs) L6-20R (2 pcs)	L14-30R (2 pcs)

Table 9 Technical specifications of the POD (PD2-200 ~ PD2-204)

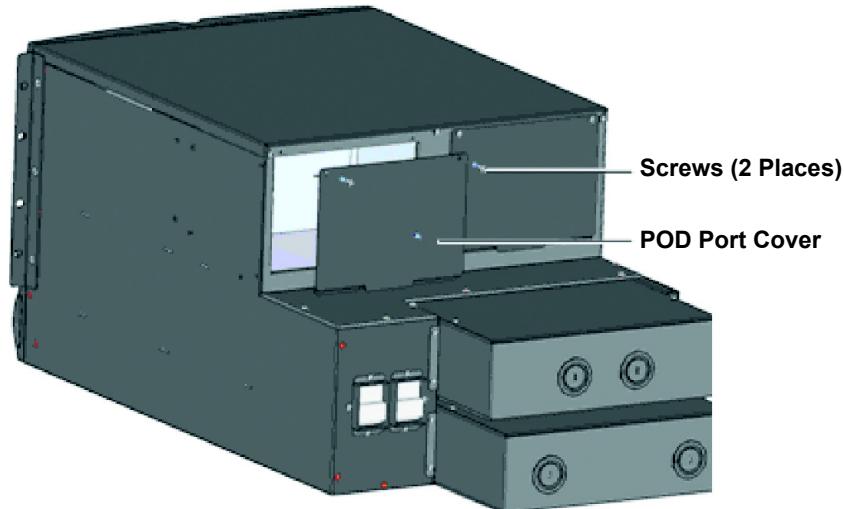
Parameter	POD model			
	PD2-200	PD2-201	PD2-202	PD2-204
Dimensions, W x D x H, in (mm)				
Unit	7.4 × 5.7 (188 × 145)			
Shipping	11.9 × 20.6 × 8.7 (302 × 522 × 220)			
Weight, lb (kg)				
Unit	4.4 (2)	4.4 (2)	4.4 (2)	4.4 (2)
Shipping	6.6 (3)	6.6 (3)	6.6 (3)	6.6 (3)
Electrical Specification				
Rating Amp.	63A 2-pole input breaker			
Output Power Connection	IEC320-C19 (4 pcs) IEC320-C13 (4 pcs)	IEC320-C19 (2 pcs) IEC320-C13 (8 pcs)	IEC320-C13 (12 pcs)	IEC309-32 (2 pcs) IEC320-C13 (4 pcs)

6.2 Installing the POD

To connect the POD:

1. Unscrew the two screws of the cover of the POD port and remove the cover, as shown in **Figure 20**.

Figure 20 Remove the cover



2. Insert the PP75 terminals of the POD into the POD port of the Liebert APS MBC.

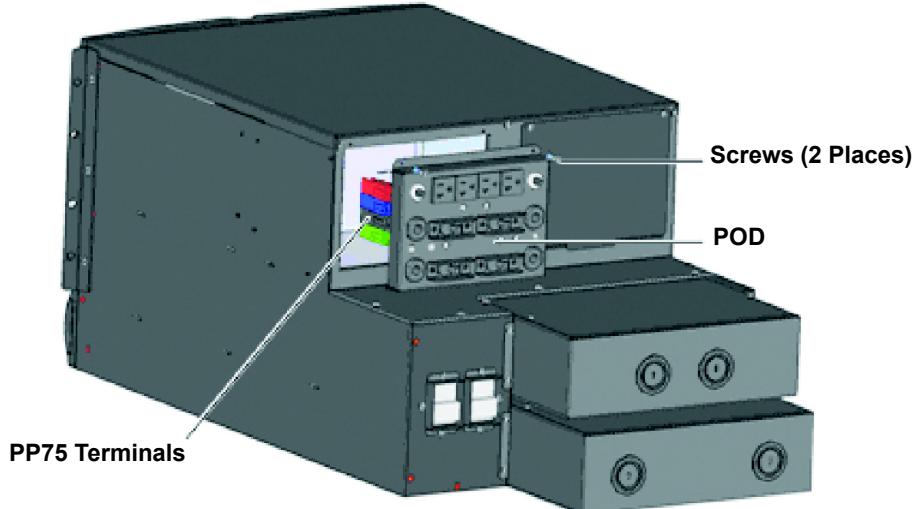
NOTICE

Risk of improper connections. Can cause improper operation.

When inserting, make sure that the colors of the PP75 terminals are corresponding to the color of the POD port.

3. Align the installation holes of the POD with that on the Liebert APS MBC, and attach the POD to the Liebert APS MBC, as shown in **Figure 21**.

Figure 21 Attach the POD



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